

ABSTRACT

Disclosed herein is a method of semiconductor device isolation, which forms a device isolation film on an isolation region of a substrate using a trench process. The method comprises the steps of providing a semiconductor substrate where a device isolation region was defined; forming a mask on the substrate in such a manner that the device isolation region is exposed through the mask; etching the substrate using the mask to form a trench; thermally treating an inner wall of the trench using the mask under a hydrogen atmosphere; forming a first insulating layer covering the resulting inner wall of the trench; forming a second insulating layer on the mask in such a manner that the second insulating film covers the first insulating film; firstly etching the second insulating layer to expose a surface of the mask; removing the mask; secondly etching the remaining second insulating layer until a surface of the substrate is exposed, thereby forming a device isolation film.